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Comparison of the initial vocabularies of normal and mildly to moderately mentally retarded children.

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COMPARISON OF THE INITIAL VOCABULARIES OF NORMAL AND MILDLY TO MODERATELY MENTALLY RETARDED CHILDREN

by

Linda J. Parsonson

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A Thesis
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ABSTRACT

The purpose of this study was to investigate the initial vocabularies of mildly and moderately mentally retarded and normal children to determine whether or not individual differences existed in their language acquisition styles. Five retarded children, all girls, and five normal children, two boys and three girls, served as subjects for the study. Mothers were responsible for recording the first 50 words used spontaneously by their children. The children's vocabularies were classified according to the grammatical categories and subcategories devised by Nelson. Children were divided into "referential" and "expressive" groups according to the criterion of whether more ("referential") or less ("expressive") than 50% of the words fell in the general nominal category. Results indicated that all of the retarded children were in the "expressive" group, three normal children were in the "referential" group, and two normal children were in the "expressive" group. Normal "referential" children used predominately single-words during the 50-word period. There was some indication that the "expressive" language style was related to phrase usage. Retarded and normal "expressive" children used fewer specific and general nominals but more modifiers and personal-social words than the normal "referential" children. Implications for the evaluation of the language development of retarded children are discussed in relation to assessment and intervention techniques which are based on characteristics of the "referential" language style.

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CHAPTER I

INTRODUCTION

Investigations of language acquisition during the 1960s were primarily concerned with documenting language universals. This emphasis on regularities in language development was initially stimulated by Chomsky's (1965, 1968) theories which described innate determinants of the course of language acquisition. Recently, research interests have begun to include the investigation of individual differences.

It is now apparent that pronounced individual differences exist in the language characteristics exhibited by normal children. Nelson (1973) was the first researcher to identify and document the extent of this variation in children's initial vocabularies. The results of this important study indicated that some children acquired vocabularies which consisted primarily of common nouns, while other children produced early words in more diverse grammatical classes. This latter group of children, characteristically, also emitted several stereotyped phrases such as "go away," "stop it," and "don't do it" (p. 24). According to Nelson, the first group of children ("referential") were using language to talk about things ("object language"), whereas the second group of children ("expressive") were employing language to talk about themselves and other people ("personal-social language").

Since the publication of Nelson's study, other researchers have

noted individual differences also exist between children at the syntactic stage of development (i.e., sentence construction stage). At this level, there is evidence to suggest that the "referential" style of language acquisition may be related to characteristics such as predominant use of nouns in sentences and word order errors (Bloom, Lightbown & Hood, 1975; Ramer, 1976). The "expressive" style of language acquisition has been associated with predominant use of pronouns in sentences and with imitations (Bloom et al., 1975; Clark, 1974). Furthermore, some researchers have provided detailed accounts of unique language characteristics of "expressive" children. For example, one "expressive" child seemed to possess distinct ways of producing long sentences (Clark, 1974). Other "expressive" children have been found to produce many unintelligible sentences (Horgan, 1980b; Peters, 1977).

Although children have been shown to exhibit different approaches to learning language, there is some evidence which indicates that the variation between children in noun and pronoun usage is reduced when mean length of utterance reaches 2.5 (Bloom et al., 1975; Horgan, 1978; Nelson, 1975). In contrast, a few investigators have found that differences in language acquisition patterns persist for a longer period of time (Horgan, 1980a, 1980b, 1981; Nelson, 1976).

Examination of the literature pertaining to the language development of retarded children indicates that the phenomenon of individual differences has been largely ignored. The findings of several studies which have examined regularities in language characteristics in this population indicate that the language development of retarded children is not qualitatively different from that observed in normal children of

similar mental age but younger chronological age. It is the purpose of this study to investigate the initial vocabularies of mildly and moderately mentally retarded and normal children to determine whether or not individual differences exist in their language acquisition styles.

In the first part of this chapter, a detailed review of the literature pertaining to individual differences between normal children at various stages of language development is presented. This review is followed by an outline of the explanations which have been posited to account for the observed individual differences. The second part of this chapter deals with studies which have compared the language abilities of retarded and normal children. The chapter concludes with an argument that the "referential"-"expressive" dimension is a useful one about which to examine the language characteristics of retarded children.

Language Development of Normal Children

Several researchers have employed different terminologies to apply to individual differences in language acquisition styles among normal children. The two styles "referential" and "expressive" have been described respectively by the terms "word-baby" versus "intonation-baby" (Dore, 1974), "analytic" versus "gestalt" (Peters, 1977), "noun lover" versus "noun leaver" (Horgan, 1980b), and "nominal" versus "pronominal" (Bloom et al., 1975). Throughout this discussion, Nelson's terminology will be equated with these terms since they are highly similar (Nelson, 1981).

Nelson (1973) conducted a longitudinal investigation of the acquisition of initial words by 18 middle-class children, seven boys and eleven girls, aged between 10 and 15 months at the outset. In this study,

mothers, who were contacted monthly by the experimenter, were responsible for recording their children's first 50 words on standardized forms. Fifty-word vocabularies were acquired by the children between the ages of 15 and 24 months. Children's vocabularies were subjected to grammatical, semantic, and content analyses. For these analyses, words were included if they were said by the child, used spontaneously by the child, and employed with a consistent phonetic form and meaning by the child.

In the grammatical analyses, the words were classified according to the following categories: specific nominals (e.g., "mommy," "Dizzy"--name of pet), general nominals (e.g., "ball," "milk"), action words (e.g., "go," "up"), modifiers (e.g., "big," "hot"), personal-social words (e.g., "no," "please"), and function words (e.g., "what," "is") (pp. 16-17).

The children's vocabularies were divided into five acquisition levels (i.e., 10 words per level) to determine whether there were any developmental changes in vocabulary composition. Generally, it was found that across time, the percentage of general nominals increased, while the percentage of specific nominals decreased. In addition, the percentage of action words decreased slightly, while the percentage of modifiers, personal-social words, and function words varied somewhat from the first 10 words to the last 10 words. At each acquisition level, all of the major grammatical categories were represented.

Overall, the percentages of words from the 50-word vocabularies in each of the grammatical categories were as follows: specific nominals 14%, general nominals 51%, action words 13%, modifiers 9%, personal-social

words 8%, and function words 4%. An important outcome of this grammatical analysis was Nelson's identification of individual variation in the composition and use of these 50-word vocabularies. She noted these differences when the speech samples of all of the children were classified according to whether more or less than 50% of each of the vocabularies were in the general nominal category. This analysis led Nelson to refer to ten of the children, four boys and six girls, as "referential," and eight of the children, three boys and five girls, as "expressive."

Comparison of the two groups indicated that the "referential" children produced more general nominal words (R = 62%, E = 38%), while the "expressive" children employed more personal-social words (E = 11%, R = 5%), modifiers (E = 12%, R = 7%), and function words (E = 8%, R = 1%). Only minor differences between the two groups of children were noted in the use of the specific nominal (R = 13%, E = 15%) and action word (R = 12%, E = 15%) categories. Nelson stated that the "referential" children used language to talk about things ("object language"), whereas the "expressive" children used language to talk about themselves and other people ("personal-social language").

The individual differences observed in the grammatical analysis were found to be related to additional aspects of the children's language styles. "Expressive" children employed more phrases (range 6 to 18) than the "referential" children (range 0 to 5). Moreover, the "expressive" children's phrases were often stereotyped and beneficial for interacting with people (e.g., "go away," "stop it," "don't do it"), thus resulting in more function words and pronouns in their vocabularies (p. 24).

The semantic analysis revealed that the "expressive" children

possessed more diverse vocabularies which consisted of nonobject and object words. The "referential" children's vocabularies were comprised of mainly object words. Nelson hypothesized that these differences were related to a syntactic emphasis by "expressive" children and a semantic emphasis by "referential" children.

Examination of the content of the words in the general nominal category also indicated some differences between the two groups of children. At the 10-word level, 50% of the general nominals employed by "expressive" children were animal words; the "referential" children used this class of words less frequently (23%). At the 40-word level, 28% of the general nominals used by "referential" children were words that denoted body parts.. The "expressive" children did not use these types of words.

Analyses of rates of acquisition revealed that the "referential" children acquired general nominals faster (12.7 versus 9.0 mean words per month for R and E children, respectively) and had a higher maximum word learning rate (31.5 versus 20.3 mean words per month for R and E children, respectively). The acquisition pattern for the "expressive" children was more continuous over the 50-word period. "Referential" children also possessed larger vocabularies at two years of age (R = 215 words, E = 144 words). The "expressive" children produced 10 phrases at an earlier age (mean age: E = 18.6 months, R = 20.7 months) and overall their phrases were longer.

Thus, it is clear from Nelson's work that at an early stage of development, children do differ in the type of language they acquire. "Referential" children learn primarily common nouns and proceed to build

vocabularies rapidly. The vocabularies of "expressive" children are more diverse as reflected in their use of pronouns, modifiers, personal-social words, and function words. They produce simple sentences early and, unlike "referential" children, extend their vocabularies slowly.

Like Nelson, Dore (1974) obtained evidence of individual differences in two children's (one boy and one girl) early speech acts. In addition to examining the children's single-word productions, utterances that consisted of single prosodic patterns (e.g., rising terminal intonation contour, abrupt rising-falling contour) were inspected. The results of this study indicated that the girl employed more words ("word-baby") and her utterances served the purposes of labelling, repeating, and practicing. According to Dore, this girl used language to talk about objects in her environment ("code-oriented style"). Thus, she employed language in a similar manner to children identified by Nelson as "referential." The boy's utterances contained more prosodic patterns ("intonation-baby"). He used language in a mode that resembles that of Nelson's "expressive" children. Utterances which functioned to request, answer, call, and protest were interpreted by Dore as reflecting the boy's involvement with people in his environment ("message-oriented style").

Several researchers have examined the persistence of individual differences from single-word productions to early sentences. Although these studies have explored different aspects of the two language styles, all have documented variation between children during the transition to syntax.

The 12 children, seven boys and five girls, in Starr's (1975) study exhibited different language development patterns. Children

("referential") who initially employed object words (i.e., nouns) continued to use these words in their early sentences. However, children ("expressive") who began utilizing social response words (e.g., "hi," "yes") proceeded to produce sentences which served to relay information about their desires for objects (e.g., "want juice," "want cookie") (pp. 703-704). Thus, the results of this study indicate that not only are individual differences evident at the syntactic stage but that there is more continuity in the use of nouns by "referential" children from the presyntactic to syntactic stage.

Using a modified version of Nelson's classification system, Lieven (Note 1) concluded that two of the girls she observed were "referential" and one girl was "expressive." However, Lieven noted that personal-social words were not used differentially by the "referential" and "expressive" children.

According to Lieven, these children's early sentences reflected their emphasis on either objects ("referential") or social relations ("expressive"). In addition, Lieven noted that the "expressive" girl used the same types of words at this stage of development (e.g., "mommy," "Julian," "there," "look," "more") that she used at the presyntactic stage (p. 5). These words were used infrequently with nouns but her sentences often consisted of various combinations of these words (e.g., "There Julian.," "There(s) a more one.") (p. 5). Lieven postulated that such sentences were employed by the girl to gain attention or converse with others. However, she found these sentences difficult to interpret.

Ramer (1976) obtained evidence for the continuation of differences

in rates of acquisition between "referential" and "expressive" children. In this study, four girls ("referential") acquired syntax more rapidly than three boys ("expressive"). In addition, the girls added more complex grammatical structures to their linguistic repertoires faster, made more word order errors, and used subject-verb, subject-complement, and verb-complement constructions when syntax was initially acquired.

The boys used verb-complement constructions when syntax was initially acquired and they employed more empty forms than the girls during the early syntactic acquisition period. The use of empty forms by children was initially documented by Bloom (1973) and has also been described by Leonard (1975). According to Bloom, the distinct feature of empty forms (e.g., /widə/) is the lack of clear referents. Ramer proposed that these forms functioned to facilitate the boys' gradual acquisition of syntax since they could be used without regard to content or semantic function.

Both Peters (1977) and Horgan (1980b) studied individual children longitudinally from the period of single-words to multiword constructions. According to Nelson's terminology, these children would be classified as "expressive." Peters' description of distinct aspects of this language style is particularly informative.

Peters classified the speech style of the boy she observed as "gestalt" ("expressive") since he appeared to be aiming at producing phrases and sentences. She referred to this boy's speech as "mush mouth" because so many of his utterances were unintelligible to her (p. 563). Characteristics of the speech style included poor articulation, the use of filler syllables (e.g., /dʌdʌ/) with single-words, and clear intonation patterns. Peters (Note 2) previously termed this boy's strategy

of producing utterances with clear intonation patterns as "developing the tune before the lyrics" (p. 96).

Additional characteristics associated with the "expressive" language style were identified by Horgan (1980b). Horgan classified her daughter as a "noun leaver" ("expressive") since she used nouns infrequently. This child's early sentences were characterized as having a pivot-open look because a small set of words (e.g., "no," "hi," "bye," "it," "that") were combined with several different words (p. 14). She attended to the form of utterances rather than the content words (i.e., nouns), and often used language that consisted of word games and jokes.

Individual differences at the sentence level of development have been investigated by Bloom, Lightbown, and Hood (1975) and Clark (1974). Bloom, Lightbown, and Hood found that noun versus pronoun usage in sentences could be used to differentiate children. Clark confined her investigation to the nature of the sentence construction strategies employed by her "expressive" son.

In 1970, Bloom reported differences in syntax acquisition between three children but a follow-up report on these children and an additional child described the observed variation from a different perspective (Bloom, Lightbown & Hood, 1975). In this study, the children were divided into two groups on the basis of using predominately nouns or pronouns in their sentences. These researchers postulated that the two boys in their study employed a "pronominal" form of reference, whereas the two girls used a "nominal" form of reference. The "pronominal" strategy is similar to Nelson's "expressive" style, while the "nominal" strategy is similar to Nelson's "referential" style.

Pronominal forms were identified in the boys' sentences in relation to the grammatical categories of agent (e.g., "I"), possessor (e.g., "my"), affected-object (e.g., "it," "that"), and place (e.g., "here," "there") (p. 18). Furthermore, the affected-object and place categories were represented by various pronominals (e.g., "this one" and "it," and "here," "right here," "over there," "there") (p. 19). In contrast, the girls referred to themselves and others as agents with terms such as "Kathryn" and "mommy." They also showed more lexical specification in relation to the grammatical categories of affected-object (e.g., "book," "cookie") and place (e.g., "table," "floor") (p. 19).

Clark (1974) found that her "expressive" son used distinct ways of producing sentences. It was noted that he included previous statements in subsequent utterances (e.g., "Baby Ivan have a bath, let's go see baby Ivan have a bath.") (p. 2). He also employed sections of a model's statements in his own utterances. Clark observed that her son practiced producing imitated utterances (e.g., "Wait for it to cool.") prior to modifying them (e.g., "Wait for it to dry.") (p. 4). Long sentences were produced by this child by combining two simple sentences which at times resulted in ungrammatical sequences (e.g., "That moon flew to the moon.") (p. 6).

Thus, it is apparent that at the sentence level of development, variation between children continues to influence language development. Some children use primarily nouns in sentences; other children use primarily pronouns in sentences. In addition, the "expressive" style of language appears to be related to unique sentence construction

strategies.

The studies reviewed up to this point have found several characteristics to be associated with the two language styles. A summary of the language characteristics of "referential" and "expressive" children is presented in Table 1.

Bloom et al. (1975), Nelson (1975) and Horgan (1978) have obtained evidence which indicates that the language development of both groups of children becomes similar in several respects when mean length of utterance (MLU) is approximately 2.5.

The children observed by Bloom et al. (1975) employed nouns and pronouns in a similar manner by the time MLU reached the 2.5 level. At this time, the two boys (initially classified as using "pronominal" reference) used more nouns than pronouns in the grammatical category affected-object and the two girls (initially classified as using "nominal" reference) used more pronouns than nouns in the grammatical category agent. Thus, this shift in reference forms reduced the variation initially noted between these children.

Like Bloom et al., Nelson (1975) found evidence for convergence in the use of nouns and pronouns between two and three years of age by the children she had previously classified as either "referential" or "expressive." Nelson compared the speech samples of the two groups of children at low MLU levels (1.0 to 2.5) and high MLU levels (2.5 to 4.5). At the low MLU level, "referential" children employed more nouns overall and in sentences, whereas the "expressive" children employed more pronouns overall and in sentences. However, at the high MLU level, the use of nouns by the "referential" children decreased, while

Table 1

Summary of Language Characteristics of

"Referential" and "Expressive" Children

"Referential"	"Expressive"
Nelson (1973), 18 children, age range 10-24 months	
- 10 children	- 8 children
- common nouns	- pronouns, modifiers, personal-social words, and function words
- single words	- stereotyped phrases
- rapid vocabulary builders	- slow vocabulary builders
Dore (1974), 2 children, age range 15-19 months	
- single words ("word-baby")	- prosodically marked utterances ("intonation-baby")
Starr (1975), 12 children, age range 17-25 months	
- continue to use nouns in early sentences	- early sentences express desires for objects
Lieven (Note 1), 3 children, age range 17-29 months	
- 2 children	- 1 child
- continuity of object emphasis in early sentences	- continuity of social relations emphasis in early sentences
Ramer (1976), 7 children, age range 15-27 months	
- 4 children	- 3 children
- rapid syntactic developers	- slow syntactic developers
- word order errors	- empty forms
Peters (1977), 1 child, age range 7-27 months	
	- utterances approximate phrases and sentences
	- poor articulation
	- clear intonation patterns
Horgan (1980b), 1 child, age range 15-36 months	
	- early sentences possess pivot-open look
	- attention to form of utterances
	- word games and jokes
Bloom, Lightbown, and Hood (1975), 4 children, age range 19-26 months	
- 2 children	- 2 children
- predominately nouns in sentences	- predominately pronouns in sentences
Clark (1974), 1 child, age range 15-36 months	
	- imitation
	- long sentences

the "expressive" children increased their use of nouns.

Horgan (1978) also noted that her daughter ("expressive") shifted to a greater emphasis on nouns overall and in her sentences at the age of one year seven months. She stated that this shift occurred at about the same time (MLU 1.7 to just past 2.0) that Bloom et al. (1975) reported for their subjects. At this time, she also changed from an initial emphasis on the form of questions to an emphasis on the content of questions in a comprehension task.

The results of these studies indicate that although children vary in relation to noun versus pronoun usage initially, they proceed to acquire the alternative form of reference at a later period of time. In contrast, a few investigators have noted continuing effects of the two different language styles.

Nelson (1976) found some tendency for the children she previously classified as "referential" to increase their use of adjectives, while "expressive" children were inclined to use more possessives between the MLU range 2.5 to 4.5.

Horgan has conducted several investigations pertinent to the question of whether differences between children in initial language use continue to influence language development. She prefers to use the terms "noun lover" ("referential") and "noun leaver" ("expressive") to denote noun emphasis versus non-noun emphasis, respectively (Horgan, 1980b).

In one study, 30 children were divided into pairs on the basis of MLU (3.18 to 5.44) (Horgan, 1981). The children in each pair differed in age by six months or more. It was found that the younger children were "noun lovers," while the older children were "noun leavers." The younger

children (faster language learners in terms of MLU) utilized more nouns and complex noun phrases. In addition, these children were shown to make more errors of pronoun gender, pronoun case (e.g., "Him's a mother.," "Her has a bell."), and more errors of verb tense and number agreement (p. 635). The older children (slower language learners in terms of MLU) performed better on a comprehension task. There was some tendency for these children to produce more types of constructions (e.g., full passives, subordinate clauses, etc.), and more main verbs and auxiliaries.

Two other studies revealed differences between children primarily related to noun emphasis. Horgan (1980a) found that different types of errors were made by four children in a comprehension task. These children were drawn from a larger sample of children who ranged in age from two years to four years two months. Two of the children ("noun lovers") made only object errors; the other two children ("noun leavers") made only subject errors. According to Horgan, these different types of errors may reflect differential attention by the two groups of children to certain word positions. In addition, Horgan (1980b) reanalyzed the speech samples of a group of children drawn from a larger sample of children who ranged in age from two years to fourteen years. Children who produced nonreversible instrumental passives were found to be "noun lovers" since they used more noun phrases and longer noun phrases. Children who used reversible passives were classified as "noun leavers."

The results of these studies suggest that the way children initially acquire language has implications for later language development.

Several explanations have been proposed to account for the

observed variations in language characteristics between children. Researchers have suggested the contributory role of hemispheric lateralization (Peters, 1977), maturation of cognitive skill (Bates, 1979), cognitive style (Bloom & Lahey, 1978; Wolf & Gardner, 1979), language environment (Corte, Benedict & Klein, 1983; Klein, 1980; Lieven, 1978a, 1978b; Furrow & Nelson, Note 3), birth order (Nelson, 1973), and parental education (Nelson, 1973). In addition, Nelson (1981) reviewed the literature and concluded that differential patterns of language acquisition may be related to the types of contexts in which children produce their utterances. At the present time, it appears that the issue has not been resolved sufficiently to permit one to decide which explanation is correct.

In summary, researchers have documented individual differences between normal children at various stages of language development. Initially, some children use primarily common nouns in their single-word utterances. Their early sentences also contain many nouns. Other children often produce phrases when they begin to acquire language. Poor articulation and clear intonation patterns characterize their utterances. Their early sentences possess a pivot-open look. Furthermore, these children's sentences often contain empty forms and many pronouns.

Some researchers have found that normal children of the two style groups become more similar to one another in the use of nouns and pronouns between two and three years of age. However, there is some evidence which suggests that the "referential" and "expressive" language styles continue to influence later language development. Although individual differences among normal children in language acquisition

patterns have been identified, there is no consensus about how to explain the occurrence of the observed variations.

Language Development of Mentally Retarded Children

The predominant interest of researchers assessing the language development of retarded children has been to determine whether language is acquired merely at a slower rate but in a similar way or in a different way than that observed in normal children (de Villiers & de Villiers, 1978).

To the author's knowledge, there is only one study which has dealt with the issue of individual differences in the language acquisition patterns of retarded children. McCabe (Note 4) examined the multiword utterances of six mildly to moderately retarded children, three boys and three girls, who ranged in age from two years three months to five years eight months at the onset of the study. The children's speech samples were analyzed at three MLU levels: 1) less than 2.5, 2) between 2.5 and 4.5, and 3) greater than 4.5 so that comparisons could be made with the data obtained by Nelson (1975) for normal children.

The results of this study revealed an increase in the use of nominals with increasing MLU. However, it was found that this increase was accounted for by a rise in the use of pronouns. The usage of nouns remained relatively constant across MLU levels. It was noted that when MLU was less than 2.5, the data from these retarded children were comparable to that reported by Nelson for "expressive" children. In addition, the retarded children frequently employed unanalyzed phrases and specific nominals. Unlike Nelson's "expressive" children, these retarded children did not utilize more nouns when MLU passed the 2.5

level. Thus, the results of this preliminary investigation suggest that retarded children may persist in using an "expressive" language style. McCabe concluded that the language development of the retarded children was quantitatively different from some normal children ("expressive") but qualitatively different from other normal children ("referential").

Although the phenomenon of individual differences has otherwise been largely ignored in this area, several researchers have attempted to determine whether the language development of retarded children is similar to or different from that observed in normal children. Studies which are pertinent to this discussion will now be reviewed.

It is not surprising that the degree of delay in language development has been found to be related to the IQ level of retarded children. For example, Karlin and Strazzulla (1952) found that lower IQ (IQ range 15 to 25) retarded children were more delayed in the onset of speech and the transition from single-words to simple sentences than retarded children with higher IQs (IQ range 51 to 70). Other researchers have concluded that various language abilities of the retarded resemble those observed in normal children of similar mental age but younger chronological age.

The results of the studies conducted by Mein (1961) and Sievers and Essa (1961) indicate that words in more grammatical categories appear in the speech of the retarded with increasing mental age. As the mental age of Mein's severely retarded institutionalized subjects (CA range 10 to 30) increased from the range 3.0 to 3.11 to the range 6.0 to 6.11, there was a corresponding decrease in the percentage of nouns employed and an overall increase in the use of other parts of speech (e.g., verbs, adjectives, adverbs, prepositions, pronouns, articles, and conjunctions)

as revealed in their picture description and interview responses. This developmental pattern was seen as being similar to that found in earlier investigations with normal children. Similarly, Sievers and Essa (1961) noted that the institutionalized (CA range 6 to 16, mean IQ = 38.35) and community retarded (CA range 7 to 16, mean IQ = 41.42) subjects in their study produced fewer nouns and more pronouns, verbs, and prepositions with increasing mental age.

Mein (1961) also found that subjects classified as Down's syndrome were more delayed in language development than retarded children with other etiologies. These subjects emitted more nouns and fewer articles in their picture description responses than the other retarded subjects.

Other investigators have found similarities in word usage of normal and retarded children. The institutionalized retarded subjects (CA range 11 to 24, IQ range 23 to 75) observed by Beier, Starkweather, and Lambert (1969) produced similar frequent words as a group of normals in a previous study (Beier, Starkweather & Miller, 1967). However, there were some differences between the two groups in relation to word usage. It was found that the retarded used more positive words (e.g., "yes," "okay") and self-reference words (e.g., "I," "me"), while the normals used more words to refer to others (p. 929). These researchers stated that the use of positive words by the retarded could have been due to the institutional environment. The use of self-reference words was seen as being similar to that of young normals. Within the retarded group, those with lower IQs talked about objects and produced unrelated words, whereas those with higher IQs employed more sentences, self-reference words, and questions.

Experimental investigations of the language abilities of the mentally retarded reveal that they generally perform well with object words (i.e., nouns). In a sentence repetition task, Anastasiow and Stayrook (1973) found that mildly retarded children performed like normals of equivalent chronological age (CA range 9 to 12) in regard to concrete word errors (i.e., nouns). However, their function word errors corresponded to those made by younger normals. Lyle (1961) also noted that the retarded (CA range 6 to 13, mean IQ = 36.74) and normal (CA range 2 to 4) children in their study did not differ in their ability to label objects.

Goodstein (1970) tested educable retarded adolescents (mean CA = 14.16, IQ range 55 to 79) on modified cloze tasks. These tests assessed recognition and production language abilities with sentences containing deleted classes of words. In the recognition test, these adolescents performed poorly on sentences with noun and verb deletions. Verb deletions were the most difficult in the production test. Goodstein noted that overall the performance of these children did not deviate from that of a group of normals matched on the basis of mental age.

The results of the reviewed studies appear to support the contention that the language development of retarded children is delayed but not qualitatively different from that observed in normal children of similar mental age but younger chronological age. Other researchers, however, have documented differences in the language abilities of retarded and normal children.

Mein and O'Connor (1960) reported that the group of institutionalized retarded subjects (CA range 10 to 30, IQ range 18 to

49) in their study used more common words and fewer different words than the group of normals observed by Burroughs (1957). However, a follow-up analysis of the vocabularies of these retarded subjects revealed that as mental age increased, they acquired more different types of words (Wolfensberger, Mein & O'Connor, 1963). No comparison with normative data was made. In addition, the significance of the initial differences in vocabulary acquisition appears to be questionable since Mein (1961), as reported above, found that the same subjects used parts of speech which were similar to those employed by normals. Thus, the language development of these retarded children might not be qualitatively different from that of normal children.

Both Goda (1964) and Willis and Garrison (1970) used a classification system for parts of speech to investigate the types of words utilized by retarded and normal adolescents. Goda found differences between the types of words used by institutionalized retarded adolescents aged 12 to 18 (IQ range 55 to 85) and normal adolescents of the same age. Although nouns were used frequently by both groups, retarded adolescents employed more verbs, whereas normals used more adjectives and function words in their responses to stimulus pictures. This differential use of types of words was reflected in the more grammatically complex sentences produced by the normals.

In contrast to the results of the above study, Willis and Garrison (1970) obtained evidence that a group of educable retarded adolescents (IQ range 68 to 85) employed more nouns than a group of normal adolescents of the same age (mean CA = 13.98) in their responses to stimulus pictures. However, the normal adolescents also produced

longer sentences.

The retarded and normal subjects in the following studies were matched on the basis of chronological age or mental age. Most of the institutionalized retarded subjects (CA range 5 to 14, IQ range 46 to 78) observed by Lozar, Wepman, and Hass (1972) differed in terms of at least one of the part of speech categories examined from a group of normals of either the same chronological age or the same mental age observed previously (Wepman & Hass, 1969). These researchers proposed that the differences may have been related to the institutional environment or the fact that the normals used narratives while the retarded supplied descriptions of the stimulus pictures.

An additional study which utilized the modified cloze procedure revealed that institutionalized educable retarded subjects (mean CA = 11.76, mean IQ = 70.15) performed poorly on sentences with deleted adjectives (Semmel, Barritt & Bennett, 1970). Public school educable retarded (mean CA = 11.80, mean IQ = 69.60) and normals of either the same chronological age or the same mental age performed poorly on sentences with deleted verbs. However, the results of this study indicated that overall the mean performance scores of the retarded deviated from those of the normals on the modified cloze task. Furthermore, within the retarded group, the institutionalized were less efficient on this task.

Thus, there is some evidence that retarded individuals use words in different grammatical classes than normals. However, the differences seem to be generally small when compared to the evidence for similar but delayed language development.

In summary, there is some preliminary evidence which suggests that retarded children exhibit an "expressive" language style. Like normal "expressive" children, they often use pronouns and unanalyzed phrases. Thus, their language style appears to be similar to that of some normal children ("expressive") but different from that of other normal children ("referential").

Most of the researchers conducting studies in this area have found that the language development of retarded children is not qualitatively different from that observed in normal children of similar mental age but younger chronological age. Like normal children, retarded children decrease their use of nouns and increase their use of words in more diverse grammatical classes with increasing mental age. In general, retarded children appear to perform well with nouns. Few qualitative differences have been found in the language abilities of retarded and normal children but normal children may employ more sentences than retarded children.

The majority of the studies reviewed in this area were published prior to the literature which documented individual differences in language characteristics of normal children. Thus, most researchers have made group comparisons which probably obscured any individual differences there may have been in both the retarded and normal groups.

Rationale for the Present Study

Researchers examining the language development of normal children have found that there are two approaches to learning language. Initially, "referential" children learn primarily common nouns. Their early language development pattern consists of single-word productions

followed eventually by two-word productions. These children appear to be using an "object language" to talk about things. The initial vocabularies of "expressive" children contain words in more diverse grammatical classes. They produce both single-words and phrases very early in their language development. These children seem to be using a "personal-social language" to talk about themselves and other people. Additional investigations have documented characteristics related to the two language styles at later stages of language development.

Most researchers attempting to determine whether the language abilities of retarded children are similar to or different from those observed in normal children have not addressed the issue of individual differences in language acquisition patterns. The majority of these investigations have found that the language development of retarded children is delayed but not qualitatively different from that observed in normal children of similar mental age but younger chronological age. However, one recent study has taken into account the stylistic differences exhibited by normal children. Analyses of the multiword utterances of a group of mildly to moderately retarded children revealed that they displayed an "expressive" language style. These children often used pronouns and unanalyzed phrases in their speech.

The present study was conducted in an attempt to extend the evidence pertaining to retarded children's language acquisition style by comparing the initial vocabularies of mildly to moderately mentally retarded and normal children. The "referential"-"expressive" dimension may be a useful one about which to examine the language characteristics of retarded children since assessment and intervention techniques may need to take

into account these children's approach to learning language. If the "expressive" language style is typical of retarded children, assessment techniques which emphasize labelling abilities or do not recognize early phrase productions are likely to underestimate their language abilities. Furthermore, intervention techniques for these children may need to consider language style. It has been shown by Nelson (1973) that a mismatch between parental language style and expectations and a child's language acquisition style results in a retardation of language development among normal children. It follows from this, that programmes which are based on characteristics of the "referential" language style will probably adversely affect retarded children if they exhibit the "expressive" language style. Clearly, retarded children cannot afford to experience further language delay.

To the author's knowledge, this is the first study to address the issue of individual differences in retarded children's early language development. This study also differs in other respects from previous studies conducted with retarded children. De Villiers and de Villiers (1978) have stated that the majority of studies in this area have assessed the language abilities of institutionalized retarded children who are older than six years of age. In addition, they have noted that there are few longitudinal studies in this area. In contrast, this study is a longitudinal investigation of the language abilities of a group of young mildly to moderately retarded children living at home.

Hypothesis

It was hypothesized that the proportions of retarded children showing the two language styles would differ from the corresponding

proportions among the normal children. Specifically, it was expected that all of the retarded children would exhibit an "expressive" language style. Normal children were expected to exhibit both "referential" and "expressive" language styles.

CHAPTER II

METHOD

Subjects

Mildly and moderately mentally retarded and normally developing children at the early stages of language acquisition served as subjects for the study. The sample of normal children included two boys and three girls. The normal children ranged in age from 8 to 12 months at the start of the study. They were assigned the following pseudonyms: Jason, Michael, Christy, Laurie, and Stefanie. Two of the children were first-borns (Michael and Stefanie), two were second-borns (Jason and Laurie), and one was later-born (Christy). None of these children attended preschool.

The initial sample of retarded children included four girls and one boy. The boy died shortly after the beginning of the study. Another retarded girl was later recruited to participate. The retarded children ranged in age from 13 to 25 months at the onset of the study. They were given the following pseudonyms: Cindy, Jane, Lisa, Michelle, and Sherry. Etiologies of the retardation are Down's syndrome (Cindy and Michelle) and chromosome anomaly (Sherry). For two of the children (Jane and Lisa) etiology of the retardation is unknown. Two of the children were first-borns (Jane and Lisa), one was second-born (Cindy), and two were later-borns (Michelle and Sherry). At the initiation of

the study, the children's Bayley Mental Development Index scores ranged from 60 to less than 50 and their Psychomotor Development Index scores ranged from 74 to less than 50. Initially, all of the children were in an infant stimulation programme, four of them later attended preschool, and all lived at home.

All of the children were producing 10 words or fewer at the beginning of the study.

Materials.

Each mother was given an instruction sheet and vocabulary record sheets similar to those used by Nelson. The instruction sheet is presented in Appendix A. This sheet provided the mothers with descriptions of each of the column headings on the vocabulary record sheets. It contained directions for recording (1) the child's utterances, (2) the date that the word(s) was used, (3) whether or not the word(s) was an imitation, (4) whether or not the word(s) was said to someone, and (5) information about events which occurred when the word(s) was used. A sample of the vocabulary record sheets is given in Appendix B. The columns of these sheets were labelled (1) Word(s), (2) Date Used, (3) Imitation, (4) Was Word(s) Said to Someone?, and (5) Comment: What Was Going On?.

Design

The study was a longitudinal investigation of the early vocabularies of retarded and normal children. The time period of the study was dependent on the individual children's progress in producing 50 words spontaneously. It was decided that the study would continue until each child reached the 50-word level or for a period of one year six months

(whichever came first), and the vocabulary which had been acquired by that time would be analyzed.

At the end of the eighteen month period all of the normally developing children had produced 50 words. They acquired 50-word vocabularies between the ages of 19 to 22 months. Of the retarded children, two had reached the 50-word criterion, one had acquired no words, one had acquired 19 words at 32 months, and the mother of the fifth child decided to discontinue participation after her child had acquired 18 words at 27 months. The two retarded children were aged 22 months and 42 months when they reached the 50-word level.

Procedure

The mothers of potential subjects were contacted by telephone and appointments were made to visit them at their homes to acquaint them with the study. They were informed that the study was being conducted to examine the initial vocabularies of retarded and normal children. It was pointed out that the period of language development of interest was one in which the mother is most knowledgeable about the types of words their child produces. Mothers were asked to record the first 50 words of their children.

The mothers were given a copy of the instruction sheet and record sheet and requested to examine the forms so that any questions pertaining to them could be answered. The procedure which was followed consisted of mothers listing their children's words along with the pertinent information regarding the dates that the words were used, whether or not the words were imitations, whether or not the words were said to someone, and events which occurred when the words were used. They were informed

that sentence constructions should be recorded. If the children had produced some words at the onset of the study, the mothers were requested to simply record the words already acquired according to their approximate order of acquisition. The mothers were contacted by telephone at monthly intervals to determine the number of words acquired by their children.

As a gross check on the validity of the records, children were visited in their homes at two periods in order to collect vocabulary transcripts: after the first 10 words and at the 50-word level. At these periods, the mothers were requested to try to elicit the words their children had been noted to produce. The investigator acted as a participant observer. Each recording session lasted between one-half hour and one hour. Vocabulary records were obtained from the mothers at the end of these visits and photocopies of the sheets were mailed to them for their own information.

All of the mothers, except one, appeared to be able to meet the recording demands of the study without encountering any major difficulties. It is possible that one mother retrospectively listed her retarded child's words after 22 words were acquired since she failed to report the additional information requested on the record sheets. Therefore, the results from this child must be interpreted with caution.

Data Analysis

Tape recordings of the children's speech were transcribed and words used were compared with mothers' records. Children produced from 78% to 92% of words reported by mothers.

The words used spontaneously by each child were classified according

to the grammatical categories and subcategories devised by Nelson. Nelson's (1973) classification system consists of the following:

Specific Nominals. Words used to refer to only one exemplar of a category whether a proper name (i.e., a class with only one member) or not.

1. People ("mommy")
2. Animals ("Dizzy"--name of pet)
3. Objects ("car")

General Nominals. Words used to refer to all members of a category whether child or adult defined.

1. Objects ("ball")
2. Substances ("milk")
3. Animals and people ("doggie," "girl")
4. Letters and numbers ("E," "2")
5. Abstractions ("God")
6. Pronouns ("he")

Action Words. Words that describe, demand, or accompany action or that express attention or demand for attention. They may be used for notice, locative, or action relations.

1. Descriptive ("go")
2. Demand ("up")
3. Notice ("look")

Modifiers. Words that refer to properties or qualities of things or events. They express recurrence, disappearance, attribution, location, and possession.

1. Attributes ("big")
2. States ("hot")
3. Locatives ("there")
4. Possessives ("mine")

Personal-Social Words. Words that express affective states and social relationships; these range from highly idiosyncratic to highly conventional (e.g., "thank you"). They do not express basic operations or relations.

1. Assertions ("no")
2. Social-expressives ("please")

Function Words. Words that fulfill a solely grammatical function, words relating to other words.

1. Question words ("what")
2. Miscellaneous functions ("is") (pp. 16-17)

Nelson stated that it was difficult to reliably differentiate action words in the descriptive and demand subcategories. Therefore, she combined these subcategories in her analysis. Action words in the descriptive and demand subcategories were classified separately and then combined for analysis.

As in Nelson's study, the words were categorized according to the child's use rather than adult grammatical categories. A second rater also categorized half of the records to determine the reliability of the classifications. Percent agreement between the two raters was 97.5%.

Children were divided into "referential" and "expressive" groups according to the criterion of whether more ("referential") or less ("expressive") than 50% of the words fell in the general nominal category. Fifty-word vocabularies and smaller vocabularies of retarded children were combined for analysis.

CHAPTER III

RESULTS

The first part of this chapter deals with results obtained from the division of the children into "referential" and "expressive" groups. The grammatical distributions of vocabularies of "referential" and "expressive" children in this study and Nelson's study are then described. The discussion then turns to differences found between the distributions of vocabularies of Nelson's groups of children and the groups of children in this study, with the general nominal category eliminated. The chapter concludes with descriptions of the vocabularies of individual children who participated in the study.

Individual Differences in Language Acquisition Styles

It had been predicted that the proportions of retarded children showing the two language styles would differ from the corresponding proportions among the normal children. More specifically, it was anticipated that the "expressive" language style would predominate among the retarded children. The normal children were expected to display both "referential" and "expressive" language styles. Classification of the children into "referential" and "expressive" groups according to the criterion of whether more or less than 50% of their vocabularies fell in the general nominal category revealed that all of the retarded children were in the "expressive" group, three normal children were in the "referential"

group, and two normal children were in the "expressive" group. Thus, this division of the children into groups provides support for the hypothesis that the retarded children's language style would be similar to the mode of speech of some of the normal children but different than the mode of speech of some of the other normal children.

Fisher's exact test was used to determine whether or not the number of normal and retarded children falling into the "referential" and "expressive" groups was significantly different (Bradley, 1968). No significant difference was found. However, a significant difference may have been found had it been possible to include larger samples of normal and retarded children.

Nelson (1973) noted that the two language styles were also associated with the use of single-words or phrases. She observed that the "expressive" children employed more phrases (range 6 to 18) than the "referential" children (range 0 to 5). The normal "expressive" children in the present study produced between four to ten phrases, and the retarded "expressive" children produced between two to thirteen phrases. One normal "expressive" child employed somewhat fewer phrases than Nelson's "expressive" children. Furthermore, one of the retarded "expressive" children who reached the 50-word criterion used a small number of phrases. However, the reliability of the records kept by this child's mother is questionable. The number of phrases used by the normal "referential" children ranged from two to six. This range is similar to the one reported by Nelson for "referential" children.

Grammatical Distributions

The grammatical distributions of vocabularies of normal and retarded

children according to "referential" and "expressive" group classifications are shown in Tables 2 and 3. Nelson's distributions are displayed in Table 4 for comparison purposes.

Percentages of words in the major grammatical categories for the normal "referential" children are as follows: specific nominals 18%, general nominals 53%, action words 15%, modifiers 5%, personal-social words 9%, and function words 1%. The distribution for the normal "expressive" children is as follows: specific nominals 14%, general nominals 44%, action words 15%, modifiers 10%, personal-social words 14%, and function words 3%. The proportions for the retarded "expressive" children are as follows: specific nominals 11%, general nominals 43%, action words 15%, modifiers 13%, personal-social words 17%, and function words 1%.

Comparison of the distributions of normal "referential" and "expressive" children's vocabularies reveals some differences between the two groups besides the criterial difference in general nominals (R = 53%, E = 44%). "Referential" children produced somewhat more specific nominals (R = 18%, E = 14%). "Expressive" children employed more modifiers (E = 10%, R = 5%) and personal-social words (E = 14%, R = 9%). The proportions for the function word category are similar for both groups of children (R = 1%, E = 3%). There was no difference between the groups in the action word category (R = 15%, E = 15%).

Similar differences in the distributions of vocabularies of normal "referential" children and retarded "expressive" children are evident besides the criterial difference in general nominals (R = 53%, E = 43%). The retarded "expressive" children also used fewer specific nominals

Table 2

Distribution of Vocabularies of Normal Children by Group

Category	Functional Group: Referential[a] %	Functional Group: Expressive[b] %
Specific nominals:		
People	16.00	14.00
Animals	1.33	0
Objects	.67	0
Total	18.00	14.00
General nominals:		
Objects	26.00	20.00
Substances	14.00	10.00
Animals and people	9.33	11.00
Letters and numbers	0	0
Abstractions	1.33	0
Pronouns	2.00	3.00
Total	52.66	44.00
Action words:		
Demand-descriptive	14.00	13.00
Notice	.67	2.00
Total	14.67	15.00
Modifiers:		
Attributes	0	2.00
States	4.67	6.00
Locatives	0	1.00
Possessives	0	1.00
Total	4.67	10.00
Personal-social words:		
Assertions	3.33	5.00
Social-expressives	5.33	9.00
Total	8.66	14.00
Function words:		
Question	0	1.00
Miscellaneous	1.33	2.00
Total	1.33	3.00
Total	99.99	100.00

[a] $\underline{n} = 3$.
[b] $\underline{n} = 2$.

Table 3

Distribution of Vocabularies of Retarded Children by Group

Category	Functional Group: Expressive[a] %
Specific nominals:	
People	10.22
Animals	.73
Objects	0
Total	10.95
General nominals:	
Objects	20.44
Substances	10.22
Animals and people	5.84
Letters and numbers	0
Abstractions	.73
Pronouns	5.84
Total	43.07
Action words:	
Demand-descriptive	13.87
Notice	.73
Total	14.60
Modifiers:	
Attributes	2.19
States	8.76
Locatives	2.19
Possessives	0
Total	13.14
Personal-social words:	
Assertions	3.65
Social-expressives	13.14
Total	16.79
Function words:	
Question	1.46
Miscellaneous	0
Total	1.46
Total	100.01

[a] $n = 4$.

Table 4

Distribution of 50-Word Vocabularies by Group from Nelson (1973)

Category	Functional Group: Referential[a] %	Functional Group: Expressive[b] %
Specific nominals:		
People	12	13
Animals	1	2
Objects	1	1
Total	13	15
General nominals:		
Objects	41	20
Substances	8	5
Animals and people	11	8
Letters and numbers	1	1
Abstractions	1	1
Pronouns	1	4
Total	62	38
Action words:		
Demand-descriptive	10	12
Notice	2	3
Total	12	15
Modifiers:		
Attributes	1	1
States	5	7
Locatives	1	3
Possessives	1	1
Total	7	12
Personal-social words:		
Assertions	2	6
Social-expressives	3	5
Total	5	11
Function words:		
Question	1	3
Miscellaneous	1	5
Total	1	8
Total	100	99

Note. From "Structure and strategy in learning to talk" by K. Nelson, Monographs of the Society for Research in Child Development, 1973, 38, p. 23.

[a] $n = 10$.
[b] $n = 8$.

than the normal "referential" children (R = 18%, E = 11%). The retarded children produced more modifiers (E = 13%, R = 5%) and personal-social words (E = 17%, R = 9%). There are no differences between the groups in the action word (R = 15%, E = 15%) and function word (R = 1%, E = 1%) categories.

Comparison of the proportions presented in Tables 2 and 3 indicates that the distribution of vocabularies of retarded "expressive" children is more similar to the one given for the normal "expressive" children than the one given for the normal "referential" children. Both groups of "expressive" children used fewer specific nominals but more modifiers and personal-social words than the normal "referential" children. Across all three groups, there is no difference in the action word category.

Although the distributions of vocabularies of normal and retarded "expressive" children are similar, there are some relatively minor differences between the two sets of proportions. The retarded children used somewhat fewer specific nominals (11%) than the normal children (14%). They also used somewhat more modifiers (13% vs. 10%) and personal-social words (17% vs. 14%). Percentages for the general nominal and function word categories are similar for both groups of children.

The distributions obtained by Nelson for "referential" and "expressive" children are presented in Table 4. General nominals comprised 62% of the "referential" children's vocabularies and 38% of the "expressive" children's vocabularies. "Expressive" children employed more function words (E = 8%, R = 1%), personal-social words (E = 11%, R = 5%), and modifiers (E = 12%, R = 7%). They also tended to use somewhat more action words (E = 15%, R = 12%) and specific nominals (E = 15%, R = 13%).

Comparison of the proportional distributions of Nelson's groups of children and the groups of normal children in the present study reveals few differences. In contrast to Nelson's children, the "referential" children used more specific nominals than the "expressive" children. In addition, the children in this study did not differ in relation to the action word category, whereas Nelson's children differed somewhat.

Examination of the distributions of vocabularies of Nelson's children and the children in this study reveals differences between the "referential" and "expressive" groups besides the criterial difference in general nominals. The normal "expressive" children in this study used more personal-social words than Nelson's "referential" children (E = 14%, R = 5%). In addition, they employed somewhat more action words (E = 15%, R = 12%) and modifiers (E = 10%, R = 7%). The proportions for the specific nominal (R = 13%, E = 14%) and function word (R = 1%, E = 3%) categories are similar for both groups of children.

The normal "referential" children in this study used somewhat more specific nominals than Nelson's "expressive" children (R = 18%, E = 15%). Nelson's "expressive" children employed more modifiers (E = 12%, R = 5%) and function words (E = 8%, R = 1%). This comparison indicates similar proportions for the action word (R = 15%, E = 15%) and personal-social (R = 9%, E = 11%) categories.

The retarded "expressive" children used more personal-social words (E = 17%, R = 5%) and modifiers (E = 13%, R = 7%) than Nelson's "referential" children. They also tended to employ somewhat more action words (E = 15%, R = 12%). Percentages for the function word (R = 1%, E = 1%) and specific nominal (R = 13%, E = 11%) categories are similar

for both groups of children.

Examination of the distributions of Nelson's "expressive" children and the retarded "expressive" children reveals some differences between the two sets of percentages. The retarded "expressive" children used more personal-social words (17%) than Nelson's "expressive" children (11%). The children in Nelson's study employed more function words (8% vs. 1%) and somewhat more specific nominals (15% vs. 11%). The proportions for the action word and modifier categories are similar for both groups of children.

Subsequent Analyses

Nelson compared the proportional distributions of "referential" and "expressive" children with the general nominal category eliminated. She found that the distributions of the two groups still differed (see Figure 1). Differences were observed between the function word (E = 13% > R = 3%), specific nominal (R = 34% > E = 25%), action word (R = 32% > E = 25%), and personal-social (E = 18% > R = 13%) categories. Only a small difference was found in the modifier category (R = 18%, E = 20%).

Adjusted proportional distributions of vocabularies of the groups of children in this study were also compared to determine whether or not differences still existed between the grammatical categories (see Figure 2). Variation in the distributions of normal "referential" and "expressive" children was found between the specific nominal (R = 38% > E = 25%), modifier (E = 18% > R = 10%), and personal-social (E = 25% > R = 19%) categories. Small differences were found in the action word (R = 31%, E = 27%) and function word (R = 2%, E = 5%) categories. This pattern is

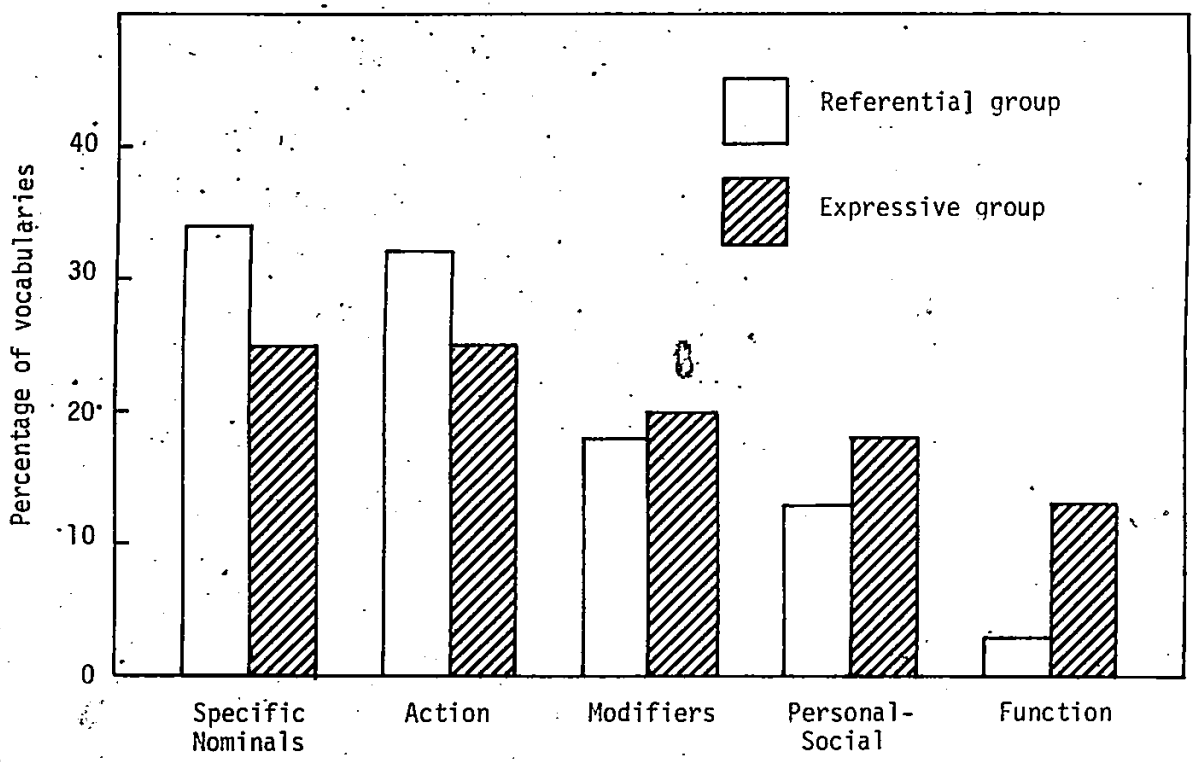

Figure 1. Percentage of vocabularies exclusive of general nominals in each remaining category by group.

Note. From "Structure and strategy in learning to talk" by K. Nelson, Monographs of the Society for Research in Child Development, 1973, 38, p. 24.

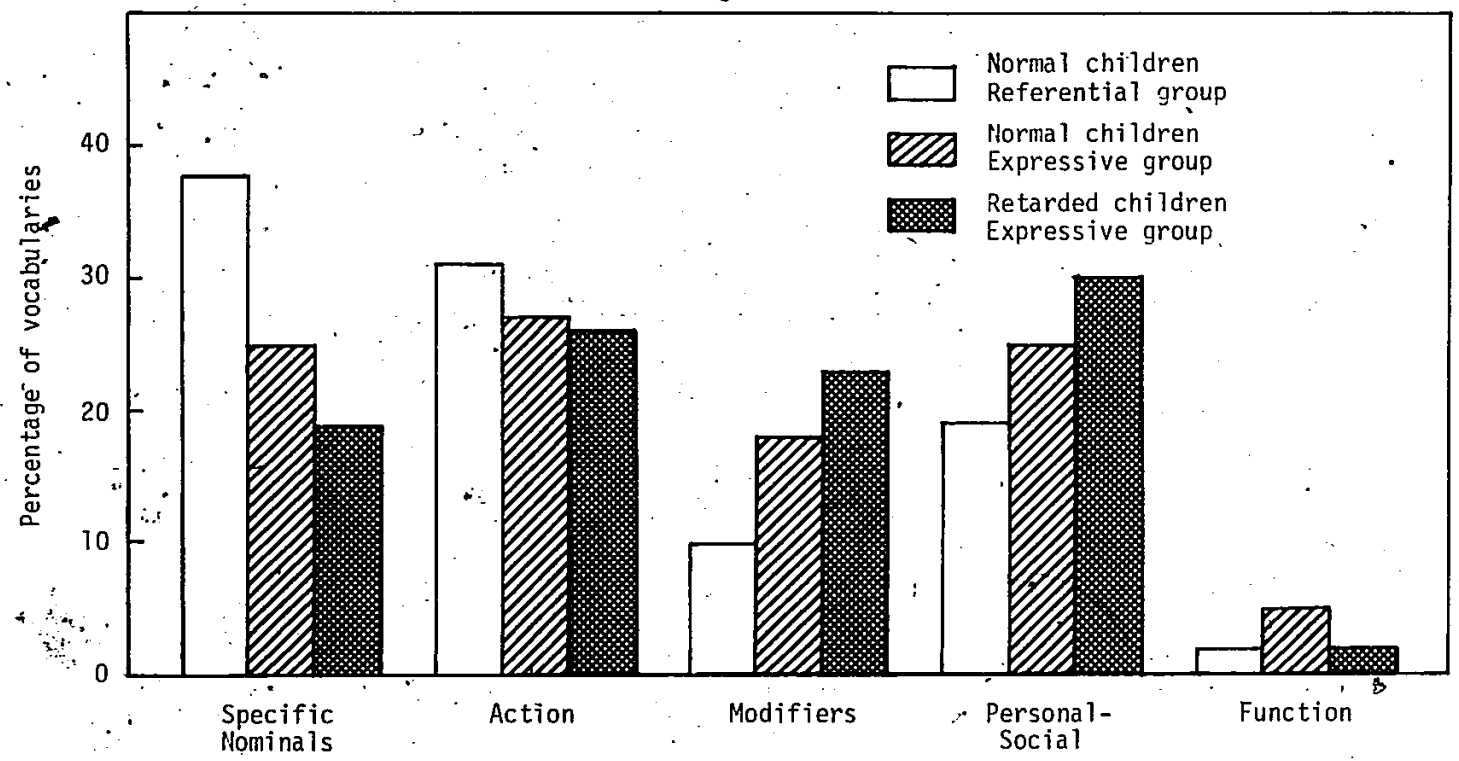

Figure 2. Percentage of vocabularies exclusive of general nominals in each remaining category by subjects and group.

highly similar to the one obtained by Nelson with the exception of the modifier category.

Comparison of the distributions of normal "referential" children and retarded "expressive" children reveals differences between the specific nominal (R = 38% > E = 19%), modifier (E = 23% > R = 10%), personal-social (E = 30% > R = 19%), and action word (R = 31% > E = 26%) categories. There is no difference in the function word category (R = 2%, E = 2%). This pattern differs from that reported by Nelson in two respects. First, these children differed in relation to the modifier category, whereas Nelson's children did not. Second, no difference was observed in the function category, whereas Nelson found a difference in this category.

Supplementary Analyses

Chi-square analyses were used to determine whether or not the "referential" and "expressive" children differed in their use of words in the specific nominal, action, modifier, personal-social, and function categories. For these analyses, the personal-social and function categories were combined since the separate expected frequencies for the function category fell below five. No significant difference was detected between normal "referential" and "expressive" children in category use, χ^2 (3) = 4.39, $p > .25$. It was found that the normal "referential" children and retarded "expressive" children differed in category use, χ^2 (3) = 10.55, $p < .02$. Normal "referential" children used more specific nominals but fewer modifiers than expected. Retarded "expressive" children used more modifiers but fewer specific nominals than expected. The cell values for these categories tended to be relatively large. No significant difference between normal and retarded "expressive" children

in category use was found, $\underline{X}^2$ (3) = .98, $\underline{p}$ > .90.

Additional chi-square analyses were conducted to determine whether or not the "referential" and "expressive" groups in this study differed from the groups in Nelson's study in the types of words used. Expected frequencies for the categories were calculated by multiplying the total number of responses obtained in the present study by the adjusted proportions reported by Nelson. Distributions of the number of words used by normal and retarded children are given in Appendix C.

Chi-square analysis revealed a significant difference between Nelson's "referential" children and the normal "expressive" children in this study in category use, $\underline{X}^2$ (3) = 9.56, $\underline{p}$ < .025. "Expressive" children utilized more personal-social and function words overall than the "referential" children. No significant difference between Nelson's "expressive" children and the normal "expressive" children was found, $\underline{X}^2$ (3) = .16, $\underline{p}$ > .99. Similarly, a significant difference was found between the normal "referential" children in this study and Nelson's "expressive" children in category use, $\underline{X}^2$ (3) = 11.12, $\underline{p}$ < .02 but not between the normal "referential" children and Nelson's "referential" children, $\underline{X}^2$ (3) = 4.64, $\underline{p}$ > .25. "Referential" children employed more specific nominals, while "expressive" children utilized somewhat more modifiers. "Expressive" children also tended to use more personal-social and function words overall. Chi-square analysis also detected a significant difference in the types of words used by Nelson's "referential" children and the retarded "expressive" children, $\underline{X}^2$ (3) = 21.55, $\underline{p}$ < .001. "Referential" children employed more specific nominals. Retarded "expressive" children utilized more personal-social and function

words overall. The retarded "expressive" children and Nelson's "expressive" children did not differ significantly in the types of words used, $\underline{X}^2$ (3) = 1.18, $\underline{p}$ >..80.

Vocabularies of Individual Children

The children's vocabularies are given in Appendix D. The individual grammatical distributions are presented in Appendix E.

Three normal children, one boy and two girls, were found to be in the "referential" group. These children's vocabularies indicate that they learned many labels during the 50-word period. However, they employed fewer general nominals than some of the "referential" children in Nelson's study. Nelson reported that 62% of the "referential" children's vocabularies were general nominals. The proportion of general nominals used by the children in this study was 53%.

The proportion of general nominals in Michael's vocabulary was 54%. Specific nominals accounted for 24% of his vocabulary. Thus, 78% of his words were specific or general nominals. The corresponding proportion for Nelson's children is 75%. In this respect, Michael's language style is primarily "referential." This child used some action words (e.g., "more," "bath"), modifiers (e.g., "dirty," "gone"), and personal-social words (e.g., "don't," "thank you"). He did not use any function words. His mother reported only two phrases during the 50-word period, "thank you" and "Beau funny."

Like Michael, Christy frequently named things and people in her environment. Fifty-two percent of her words were general nominals and 20% were specific nominals. Her remaining vocabulary was comprised of action words (e.g., "up," "done") and personal-social words (e.g., "yes,"

"bye"). She did not use any modifiers or function words. By the time she reached the 50-word level, she had produced six phrases: "hi baby," "bye daddy," "baby Franny," "granny mine bye-bye," "(child's name) down," and "juice please."

Like Christy, 52% of Laurie's words were general nominals. However, this child used fewer specific nominals (10%) than Christy. Laurie named things and people in her environment somewhat less frequently than the other two children in this group. The rest of her vocabulary contained action words (e.g., "outside," "tickle"), modifiers (e.g., "hot," "all gone"), personal-social words (e.g., "okay," "hello"), and function words (e.g., "on," "at"). She was the only child in this group who produced words in all of the major grammatical categories. Like Christy, Laurie used six phrases during the 50-word period: "more milk mama," "come on," "all gone," "bellybutton all gone," "look at that airplane," and "shirt off."

In summary, these three children appear to be using an "object language." They often named things and people in their environment during the 50-word period. In contrast, personal-social words only comprised between 4% to 12% of their vocabularies. Furthermore, they produced primarily single-words rather than phrases. The number of phrases used by these children corresponds to the numbers reported by Nelson for "referential" children.

Two normal children, one boy and one girl, were found to be in the "expressive" group. The boy's vocabulary appears to be more similar to that of Nelson's "expressive" children than the girl's vocabulary.

The proportion of general nominals used by Jason was only 42%.

Ten percent of his words were specific nominals. The proportions reported by Nelson for "expressive" children are general nominals 38% and specific nominals 15%. These figures are highly similar to the corresponding figures obtained for Jason. Jason's vocabulary contained a high proportion (20%) of personal-social words (e.g., "no," "please"). He also employed some action words (e.g., "fall," "see"), modifiers (e.g., "big," "my"), and function words (e.g., "where," "as"). Jason produced words in all of the major grammatical categories. During the 50-word period, his mother reported the following ten phrases: "that way," "see big truck," "my truck," "sis away," "nite mom," "see same as mine," "mom say hi," "yes please," "no thank you mom," and "where a cow?." This child's language style is similar in several respects to Nelson's "expressive" children. First, labels do not predominate in Jason's early words. Second, he frequently employed personal-social words. Third, he produced a number of phrases. Nelson noted that her "expressive" children's phrases were often stereotyped and beneficial for interacting with people. These features are also present in Jason's phrases.

Forty-six percent of Stefanie's words were general nominals and 18% were specific nominals. This child used more labels than Jason and some of the "expressive" children in Nelson's study. Stefanie's vocabulary contained a high proportion (20%) of action words (e.g., "down," "kiss"). She also employed some modifiers (e.g., "sad," "new") and personal-social words (e.g., "no," "bye-bye"). She did not use any function words. By the time she reached the 50-word level, she had produced four phrases: "all gone," "no sleep," "more please," and "no touch." It would appear

that this child's language style does not closely approximate Nelson's "expressive" mode of language. Stefanie used more labels and somewhat fewer personal-social words than Nelson's group of children. Furthermore, she used a smaller number of phrases than Nelson's "expressive" children.

In summary, one child in this group appears to be using a "personal-social language" to a greater extent than the other child in this group. The boy's vocabulary consisted of many personal-social words and phrases. The girl's vocabulary contained fewer personal-social words and phrases. Thus, although these children are both in the "expressive" group, differences exist between their vocabularies.

All of the retarded children were found to be in the "expressive" group. Like the normal "expressive" children, these children's vocabularies contain features of the "expressive" language style to varying degrees.

Reliable and complete data was obtained only for Lisa. Only 40% of her words were general nominals. Specific nominals comprised 8% of her vocabulary. Lisa'a vocabulary contained a high proportion (24%) of personal-social words (e.g., "yes," "night-night"). She also utilized some action words (e.g., "up," "get") and modifiers (e.g., "bad," "cool"). She did not use any function words. Her mother reported 13 phrases during the 50-word period: "bad girl," "thank you," "good girl," "no smoke," "bad cat," "scat cat," "more milk," "I sorry." "all wet," "aunt (name)," "go get it," "nice mama," and "go outside." This child's language style closely resembles Jason's and Nelson's "expressive" children. Lisa's early words were not predominately labels. She often used personal-social words. Many phrases were acquired by this child

during the 50-word period. Furthermore, some of her phrases are stereotyped and beneficial for interacting with people in her environment.

Michelle used more general nominals (48%) and somewhat more specific nominals (12%) than Lisa. However, the reliability of her mother's records is questionable. Her remaining vocabulary was comprised of action words (e.g., "down," "hug"), modifiers (e.g., "blue," "red"), and personal-social words (e.g., "hi," "please"). She did not use any function words. Michelle only produced two phrases during the 50-word period: "can't do it" and "go bye." Nelson noted that several of the mothers in her study reported phrase usage with reluctance or did not recognize their children's attempts at phrases. It is not known whether Michelle didn't produce many phrases or whether her mother's recording is inaccurate in this regard.

Cindy had produced 19 words when the study ended. Forty-seven percent of her words were general nominals and 11% were specific nominals. Thus, 58% of her words were labels for things and people in her environment. This proportion is similar to that reported by Nelson for "expressive" children. Cindy also used some action words (e.g., "up," "bath," "down," "bite") and modifiers (e.g., "hot," "bad"). She only produced one expression in the personal-social category (e.g., "thank you") and one word in the function category (e.g., "what's") during this early period of language development. However, she used four phrases: "thank you," "what's that?," "what's this?," and "bite that."

Sherry had produced 18 words when her mother decided to discontinue participation in the study. This child used fewer general nominals (33%)

than Cindy. Specific nominals were somewhat more frequent in her vocabulary (17%). Unlike Cindy, Sherry used several personal-social words (e.g., "ow," "night-night," "bye-bye," "no," "hi"). She also used two modifiers (e.g., "hot," "nice"), one action word (e.g., "up"), and one function word (e.g., "what's"). During this early period of language development, Sherry produced two phrases: "what's that?" and "what's this?."

Although 50-word vocabularies were not obtained for Cindy and Sherry, their early language is similar to Nelson's "expressive" style. Interestingly, these two children were the only ones in the study who asked "What's that?" or "What's this?." Nelson also noted that one "expressive" girl in her study asked "What's that?" but she still produced few general nominals (36%). Thus, these children may be using these questions for social interchange rather than for the purpose of acquiring object labels.

In summary, all four retarded children appear to be using a "personal-social language." One child, in particular, employed many personal-social words and phrases. The vocabularies of the other children also exhibit some of the characteristics of the "expressive" language style.

CHAPTER IV

DISCUSSION

The purpose of this study was to investigate the initial vocabularies of mildly and moderately mentally retarded and normal children to determine whether or not individual differences existed in their language acquisition styles. It had been hypothesized that the retarded children would exhibit an "expressive" language style, whereas the normal children would exhibit both "referential" and "expressive" language styles.

Classification of the children into "referential" and "expressive" groups according to the criterion of whether more or less than 50% of their vocabularies fell in the general nominal category provided some support for the hypothesis. Three normal children were classified as "referential" and two normal children were classified as "expressive." All of the retarded children were classified as "expressive." These findings suggest that the language style of retarded children is similar to that of some normal children but different from that of other normal children.

Researchers who have investigated the language styles of normal children have found that approximately half of the children in their studies are "referential" and the other half are "expressive." For example, there were ten "referential" children and eight "expressive" children in Nelson's (1973) study. A similar pattern was found for the

normal children in this study.

Like Nelson's "referential" children, the normal "referential" children used predominately single-words during the 50-word period. There was some indication that the "expressive" language style was related to phrase usage. Two of the "expressive" children, one normal child and one retarded child, employed more phrases than the "referential" children. One normal "expressive" child produced somewhat fewer phrases than Nelson's "expressive" children. Similarly, one retarded "expressive" child used a small number of phrases during the 50-word period. It should, however, be remembered that the reliability of the records kept by this child's mother is questionable.

One possible explanation for the discrepant findings related to phrase usage by some of the "expressive" children is that the mothers may not have recognized their children's attempts at phrases. Thus, their records may have underestimated the degree of phrase usage. Alternatively, the findings may be due to the degree to which the children's vocabularies reflected characteristics of the "expressive" language style. Several researchers (Horgan, 1980b; Nelson, 1975, 1981; Peters, 1977, Note 5) have emphasized that the "referential" and "expressive" language styles are not discrete types. Children espouse the "referential" and "expressive" language styles to varying degrees. Thus, there is a continuum ranging from greater lexical emphasis to greater syntactic emphasis. The retarded and normal "expressive" children who used many personal-social words and phrases also employed fewer common nouns. In contrast, the other retarded and normal "expressive" children used fewer personal-social words and phrases but

more common nouns. These children appear to have espoused the "expressive" language style to varying degrees. Thus, the vocabularies of children who produced fewer phrases probably lie closer to the midpoint of the continuum than the vocabularies of children who produced more phrases during the 50-word period.

Differences in the distributions of vocabularies of the groups of children in this study were found besides the criterial difference in general nominals. Retarded and normal "expressive" children used fewer specific nominals but more modifiers and personal-social words than the normal "referential" children. Furthermore, retarded "expressive" children tended to produce somewhat fewer specific nominals and somewhat more modifiers and personal-social words than the normal "expressive" children. This finding suggests that retarded children may differ from normal children in the degree to which they use certain types of words.

Nelson noted that "referential" children employ more common nouns, whereas "expressive" children utilize more personal-social and function words. Some discrepancies from Nelson's observations deserve comment. Nelson's group of "referential" children used more common nouns than the group of "referential" children in this study. Furthermore, Nelson's "expressive" group of children used fewer common nouns than the "expressive" group of children. Thus, the vocabularies of the groups of children in this study reflected less variability in the degree of noun and non-noun emphasis than the vocabularies of the groups of children in Nelson's study.

The normal "referential" children and Nelson's "expressive" children did not differ in their use of personal-social words. This finding is

unexpected. A possible explanation is that since the "referential" children in this study emphasized nouns to a lesser degree than some of Nelson's "referential" children, they may also have engaged in more social interaction and, therefore, used more personal-social words. The normal "referential" children may have utilized common nouns in referential (i.e., naming) contexts and personal-social words in conversational contexts (Peters, 1977). Thus, these children may have acquired several of their first 50 words in conversationally defined contexts as opposed to naming contexts and this factor may account for the finding of similar proportions of personal-social words in their vocabularies and those of Nelson's "expressive" children.

The retarded and normal "expressive" children did not differ from Nelson's "referential" children in their use of function words. This finding is probably due to the fact that the children in this study used fewer grammatically complete phrases and, therefore, fewer function words than Nelson's "expressive" children. Comparison of the adjusted proportional distributions of vocabularies of "expressive" and "referential" children in this study also indicated no differential use of function words. Thus, although the "expressive" children tended to produce more phrases than the "referential" children, their multiword constructions were not generally greater in length. The retarded children used more personal-social words than Nelson's "expressive" children for expressing feelings, needs, and social forms. This finding again suggests that retarded children may differ from normal children in the degree to which they use certain types of words.

Although the data obtained in this study for "referential" and

"expressive" language groups differs in some respects from that reported by Nelson, supplementary analyses revealed that children in the same language groups used similar types of words. In contrast, vocabularies of children in all the "expressive" groups differed from those of all the "referential" groups in the present study and Nelson's study with one exception. Normal "referential" and "expressive" children in the present study did not differ.

The most consistent finding from these analyses was that the "expressive" children in this study and Nelson's study used significantly more personal-social and function words overall than the "referential" children in this study and Nelson's study. In general, these analyses provided some support for Nelson's classification system based on the degree to which children use common nouns. In other words, some differences still existed between the vocabularies of the two language groups besides the difference in the degree of common noun emphasis.

Since this is the first study to examine the initial vocabularies of a small number of retarded children, the generality of the findings will need to be determined by future research. However, the results of this study are consistent with those obtained by McCabe (Note 4). It will be recalled that this researcher found that the multiword utterances of a group of retarded children exhibited characteristics of the "expressive" language style. These children used many pronouns and unanalyzed phrases. Furthermore, unlike normal "expressive" children, they did not shift to greater use of nouns when mean length of utterance increased.

The results of the present study extend the evidence pertaining to retarded children's language acquisition style in that their initial vocabularies were found to contain characteristics of the "expressive" mode of speech. In addition, the findings indicated that the retarded children used somewhat more pronouns than the normal "expressive" children in this study and Nelson's study. Thus, at this early stage of language development retarded children may differ in the degree to which they use pronouns and, as suggested by previous research, they may continue to use more pronouns than nouns at later stages of development. The results of this study in combination with McCabe's findings suggest that the "expressive" language style is typical of retarded children.

If future investigators replicate the findings of this study, research efforts will then need to be directed toward explaining why retarded children display an "expressive" language style. Of the various explanations posited to account for individual differences in language characteristics of normal children, the role of the linguistic environment has received the most attention. Thus, it may be beneficial for researchers to initially focus on the speech style exhibited by mothers of retarded children.

A promising line of research would be to determine whether or not mothers of retarded children employ more statements which direct their children's behavior and/or verbalizations than statements which describe their surroundings. Mothers' speech style may be associated with the extent to which their children use common nouns (Corte, Benedict & Klein, 1983). Retarded children may acquire a low proportion of common nouns if their mothers use a low proportion of descriptive statements. Another

line of inquiry which could be pursued would be to determine whether or not mothers use predominately pronouns in speech directed to their children. There may be a relationship between mothers' use of pronouns and their children's use of pronouns (Klein, 1980; Furrow & Nelson, Note 3). One other line of research would be to determine whether or not mothers frequently employ phrases when speaking to their children (Lieven, 1978a; Peters, 1977). The degree of phrase usage by mothers may be correlated with the degree of phrase usage by their children. These research possibilities may provide important information about the role that the linguistic environment plays in retarded children's approach to learning language.

The identification of individual differences in the language characteristics of normal children has resulted in some researchers pointing out problems with traditional theories of language development. Traditional theories have described children's language development as proceeding from the production of single-words to the production of phrases and sentences. Subjects for early studies of language acquisition were highly selected; probably the most critical criterion was clear articulation. This speech characteristic has been shown to be typical of "referential" children (Horgan, 1980b; Peters, 1977; Lieven, Note 1). Furthermore, early studies frequently examined the language development of first-born children of highly educated parents. It has been shown that these children typically display the "referential" mode of speech (Nelson, 1973). Thus, traditional theories derived from early studies conducted with a select group of children are based primarily on only one of the approaches children may employ in acquiring language. It is now

apparent that traditional descriptions of language development fail to account for the "expressive" language style (Nelson, 1981; Peters, 1977, Note 5). It is not surprising that some researchers (Peters, 1977; Brannigan, Note 6) working within the traditional theoretical framework expressed their amazement at hearing young children produce multiword constructions rather than single-words.

Although researchers in this area have recognized the inaccuracies of existing theories, revised descriptions of language development are just beginning to be formulated. Peters (Note 5) has provided a preliminary account of language development which integrates the "referential" and "expressive" language acquisition styles. According to Peters, children can isolate different sized units from the speech stream. "Referential" children isolate mainly single-words and proceed to combine words in sentences. "Expressive" children isolate more larger sized units and proceed to break down these utterances by using the process of phonological comparison. They isolate words in their multiword constructions which can later be recombined in new utterances. They can also combine multiword constructions to produce longer utterances. Peters pointed out that early multiword utterances do not belong in the "linguistic trash heap" but rather should be viewed as contributing to the child's developing grammar (p. 2).

Revised descriptions of language development may be especially important if retarded children exhibit an "expressive" language style. Furthermore, it may be inappropriate for researchers to use mean length of utterance to estimate the linguistic ability of retarded children if they do not proceed from the production of single-words to the production

of phrases and sentences.

Assessment and intervention techniques which are based on characteristics of the "referential" language style may have important implications for the evaluation of the language development of retarded children if they exhibit an "expressive" language style. Assessment techniques which attempt to evaluate the overt labelling abilities of retarded children may underestimate their language abilities. For example, retarded children may perform poorly on items in the Bayley tests of infant development which require names of presented objects or names of objects in pictures if nouns do not predominate in their early vocabularies. In addition, assessment techniques which include vocabulary counts may not accurately assess these children's language abilities. Previous research has shown that normal "expressive" children possess smaller vocabularies than "referential" children at two years of age (Nelson, 1973). It may be more appropriate to assess the comprehension abilities of retarded children rather than their production abilities. There is some evidence which suggests that normal "expressive" children perform better on tests such as the Peabody Picture Vocabulary Test (Nelson, 1973).

Assessments of the language abilities of retarded children by both parents and professionals may also underestimate their language abilities. Middle-class families appear to expect their children to initially produce object labels (Peters, Note 5). Similarly, professionals working within the traditional framework are likely to expect retarded children to first produce single-words and only later produce phrases and sentences. The results of this study suggest that retarded children may produce many

phrases when they begin to acquire language. Thus, parents and professionals may need to adjust their expectations and recognize these children's early phrase productions. Their task will be complicated by the fact that "expressive" children often poorly articulate their multiword constructions. However, if parents and professionals are attuned to the possibility of hearing multiword constructions, they may be able to interpret these utterances.

Intervention techniques for retarded children which are based on characteristics of the "referential" language style may retard the language progress of these children if they exhibit an "expressive" language style. Intervention techniques will probably need to consider the language style espoused by retarded children. Problems may arise if there is a mismatch between the language style used by a speech therapist and retarded child. Language learning may be adversely affected if the speech therapist uses the "referential" mode of speech and rejects the child's "expressive" mode of speech. The speech therapist's expectations and reward system may affect the degree of linguistic progress exhibited by a retarded child. Research with normal children has indicated that the most harmful situation for language learning is one in which a mother uses the "referential" mode of speech and rejects her child's "expressive" mode of speech (Nelson, 1973). Clearly, retarded children cannot afford to experience further language delay.

Intervention programmes designed on the basis of retarded children's language style are likely to be more successful. If retarded children display an "expressive" mode of speech, language development may be facilitated if professionals use and accept utterances which reflect a

personal-social language. It has been observed that progress in language learning is enhanced when both mother and child employ the "expressive" mode of speech and the child's utterances are accepted by his/her mother (Nelson, 1973). Thus, professionals may need to consider both the type of language they use and the type of feedback they give to retarded children in formulating effective intervention programmes.

In summary, the results of this study suggest that the "referential"-"expressive" dimension is a useful one about which to examine the language characteristics of retarded children. The "expressive" language style may be typical of retarded children. Thus, their language development may be qualitatively different from some normal children ("referential") but only quantitatively different from other normal children ("expressive"). It is important to recognize that "referential" speech is not superior to "expressive" speech (Horgan, 1980b; Nelson, 1981). Rather, the two language styles simply reflect different language learning approaches. In the case of retarded children, "expressive" speech may characterize their approach to language learning.

Traditional theories of language development have focused on characteristics shown to be typical of the "referential" language style. However, revised theories of language development which incorporate the "expressive" language style are beginning to be constructed in order to present a more accurate description of the language acquisition process. New theories of language development may be especially important if retarded children exhibit an "expressive" language style. Furthermore, assessment and intervention techniques may need to take into consideration the language style espoused by retarded children. Both

parents and professionals may expect these children to initially learn object labels. They may also expect these children to first produce single-words and only later produce phrases and sentences. The results of this study suggest that retarded children may not approach the language learning task in this manner.

APPENDIX

APPENDIX A

INSTRUCTIONS GIVEN TO MOTHERS FOR VOCABULARY RECORDING

INSTRUCTION SHEET

Column 1: Word(s). Report any sound that the child makes which (a) imitates a word(s) said by an adult or older child; or (b) is used as a word(s) by the child to indicate some thing, person, action, want, etc., whether or not it sounds like the adult words for the same thing. As far as possible, give both the child's pronunciation and the adult word(s) that it means. If you are not sure whether the child is using it to mean something, note this under Comment.

Column 2: Date Used. Date the child first used the word(s).

Column 3: Imitation. Yes or No. (Was the word(s) said just after it was used by someone else?)

Column 4: Was Word(s) Said to Someone? Yes or No. (Did the child seem to be speaking to himself/herself or to someone who was with him/her at the time?)

Column 5: What Was Going On? Make a brief note of:

Where was he/she?

Who was present with him/her?

What was he/she doing? Was he/she playing with something or using something? If so, what?

What kind of mood was he/she in? Happy? Irritable?

What do you think he/she was trying to say?

APPENDIX B

SAMPLE OF VOCABULARY RECORD SHEETS GIVEN TO MOTHERS

VOCABULARY RECORD SHEET

Word(s) (1)	Date Used (2)	Imitation (3)	Was Word(s) Said to Someone? (4)	Comment: What Was Going On? (See Instruction Sheet) (5)

APPENDIX C

DISTRIBUTIONS OF NUMBER OF WORDS USED BY NORMAL AND RETARDED CHILDREN BY GROUP

DISTRIBUTION OF NUMBER OF WORDS USED BY NORMAL CHILDREN BY GROUP

Category	Functional Group	
	Referential	Expressive
Specific nominals:		
People	24	14
Animals	2	0
Objects	1	0
Total	27	14
General nominals:		
Objects	39	20
Substances	21	10
Animals and people	14	11
Letters and numbers	0	0
Abstractions	2	0
Pronouns	3	3
Total	79	44
Action words:		
Demand-descriptive	21	13
Notice	1	2
Total	22	15
Modifiers:		
Attributes	0	2
States	7	6
Locatives	0	1
Possessives	0	1
Total	7	10
Personal-social words:		
Assertions	5	5
Social-expressives	8	9
Total	13	14
Function words:		
Question	0	1
Miscellaneous	2	2
Total	2	3
Total	150	100

DISTRIBUTION OF NUMBER OF WORDS USED

BY RETARDED CHILDREN BY GROUP

Category	Functional Group: Expressive
Specific nominals:	
People	14
Animals	1
Objects	0
Total	15
General nominals:	
Objects	28
Substances	14
Animals and people	8
Letters and numbers	0
Abstractions	1
Pronouns	8
Total	59
Action words:	
Demand-descriptive	19
Notice	1
Total	20
Modifiers:	
Attributes	3
States	12
Locatives	3
Possessives	0
Total	18
Personal-social words:	
Assertions	5
Social-expressives	18
Total	23
Function words:	
Question	2
Miscellaneous	0
Total	2
Total	137

APPENDIX D

CHILDREN'S VOCABULARIES

MICHAEL'S VOCABULARY

1. momma
2. dada
3. nana
4. thank you
5. milk
6. more
7. juice
8. Beau (name of dog)
9. dinner
10. car
11. Denise
12. bath
13. spoon
14. bird
15. bus
16. pool
17. eyes
18. nose
19. teeth
20. glasses
21. cookie
22. don't
23. down
24. dirty
25. potty
26. doggie
27. Buckey (name of toy horse)
28. truck
29. back
30. apple
31. Daniels
32. Ann
33. Tommy
34. Johnny
35. (mother's name)
36. poppy
37. cord
38. water
39. pen
40. egg
41. gone
42. get
43. bottle
44. man
45. boy
46. spaghetti
47. funny
48. thirsty
49. supper
50. bed

CHRISTY'S VOCABULARY

1. mama
2. da
3. baby
4. ball
5. bear
6. more
7. bye
8. hi
9. cracker
10. car
11. bird
12. bath
13. mine
14. home
15. yes
16. bubbles
17. ice
18. (sister's name)
19. nurse
20. banana
21. bum
22. Debbie
23. pee-pee
24. jacket
25. Franny
26. granny
27. tea
28. cheese
29. scissors
30. balloon
31. me
32. cat
33. eye
34. done
35. ice cream
36. draw
37. please
38. (sister's name)
39. choo-choo
40. up
41. grandpa
42. (child's name)
43. marker
44. night-night
45. down
46. food
47. dolly
48. woof-woof
49. ooo-yuck
50. juice

LAURIE'S VOCABULARY

1. da
2. mama
3. (sister's name)
4. more
5. milk
6. hot
7. light
8. socks
9. dish
10. tickle
11. bum
12. pop
13. outside
14. bye
15. ball
16. come
17. on
18. okay
19. Cathy
20. hello
21. cat
22. blanket
23. shorts
24. shirt
25. bunny-bunny
26. car
27. butter
28. fall
29. all gone
30. cold
31. clay
32. pants
33. geese
34. banana
35. lion
36. bath
37. (relative's name)
38. bellybutton
39. look
40. at
41. that
42. airplane
43. no
44. yes
45. peek-a-boo
46. chicken
47. pool
48. off
49. water
50. cookie

JASON'S VOCABULARY

1. mama
2. hot
3. truck
4. that
5. way
6. hi
7. pizza
8. soother
9. pop
10. fall
11. sister
12. Raffi (singer's name)
13. waffle
14. dada
15. gum
16. boat
17. cow
18. grandpa
19. yes
20. see
21. big
22. tractor
23. mine
24. my
25. duck
26. horse
27. sheep
28. frog
29. woof-woof
30. ow
31. away
32. nite
33. no
34. hat
35. watch
36. wait
37. ball
38. okay
39. same
40. as
41. say
42. bee
43. please
44. thank you
45. cat
46. water
47. golly-golly
48. where
49. a
50. put

STEFANIE'S VOCABULARY

1. dada
2. mama
3. dog
4. cracker
5. ball
6. ya yaw (name for neighbor)
7. bath
8. milk
9. bye-bye
10. hi
11. balloon
12. bear
13. baby
14. (relative's name)
15. Mary
16. car
17. swing
18. hair
19. eye
20. poop
21. popsicle
22. up
23. down
24. shoes
25. book
26. all gone
27. please
28. me
29. no
30. Jennifer
31. sad
32. crying
33. happy
34. sleep
35. grandmère
36. grandpère
37. snow
38. snowman
39. hat
40. boots
41. (child's name)
42. more
43. candy
44. tree
45. touch
46. new
47. pants
48. scarf
49. kiss
50. hug

LISA'S VOCABULARY

1. mama
2. bye-bye
3. car
4. yes
5. hi
6. up
7. bad
8. mmm
9. girl
10. oh-oh
11. ow
12. dog
13. cat
14. grandma
15. thank you
16. no-no
17. ball
18. wow
19. good
20. caca
21. cake
22. night-night
23. smoke
24. cow
25. scat
26. go
27. light
28. banana
29. shoe
30. cookie
31. milk
32. more
33. candy
34. Kermit
35. mine
36. I
37. sorry
38. eye
39. nose
40. cool
41. all
42. wet
43. cartoon
44. aunt (name)
45. get
46. it
47. nice
48. outside
49. okay
50. man

MICHELLE'S VOCABULARY

1. dada
2. food
3. music
4. baby
5. cracker
6. down
7. bus
8. up
9. ball
10. fun
11. hi
12. blue
13. more
14. mmm
15. can't
16. do
17. it
18. catch
19. (sister's name)
20. bye
21. there
22. go
23. red
24. green
25. see
26. door
27. toes
28. toast
29. cheese
30. (sister's name)
31. (sister's name)
32. (relative's name)
33. (relative's name)
34. rain
35. shoes
36. knee
37. school
38. ear
39. eye
40. teeth
41. tree
42. pop
43. juice
44. book
45. hair
46. hug
47. please
48. happy
49. apple
50. upstairs

CINDY'S VOCABULARY

1. dada
2. up
3. thank you
4. mama
5. bath
6. light
7. hair
8. dog
9. bottle
10. hot
11. bad
12. down
13. bite
14. button
15. what's
16. that
17. this
18. book
19. cheese

SHERRY'S VOCABULARY

1. what's
2. that
3. daddy
4. mama
5. up
6. hot
7. hat
8. (relative's name)
9. ow
10. doggie
11. night-night
12. bye-bye
13. nice
14. keys
15. this
16. eye
17. no
18. hi

APPENDIX E

DISTRIBUTIONS OF CHILDREN'S VOCABULARIES

DISTRIBUTION OF MICHAEL'S VOCABULARY

Category	%
Specific nominals:	
People	20
Animals	4
Objects	-
Total	24
General nominals:	
Objects	28
Substances	14
Animals and people	8
Letters and numbers	-
Abstractions	4
Pronouns	-
Total	54
Action words:	
Demand-descriptive	10
Notice	-
Total	10
Modifiers:	
Attributes	-
States	8
Locatives	-
Possessives	-
Total	8
Personal-social words:	
Assertions	2
Social-expressives	2
Total	4
Function words:	
Question	-
Miscellaneous	-
Total	-
Total	100

DISTRIBUTION OF CHRISTY'S VOCABULARY

Category	%
Specific nominals:	
People	18
Animals	-
Objects	2
Total	20
General nominals:	
Objects	22
Substances	16
Animals and people	10
Letters and numbers	-
Abstractions	-
Pronouns	4
Total	52
Action words:	
Demand-descriptive	16
Notice	-
Total	16
Modifiers:	
Attributes	-
States	-
Locatives	-
Possessives	-
Total	-
Personal-social words:	
Assertions	2
Social-expressives	10
Total	12
Function words:	
Question	-
Miscellaneous	-
Total	-
Total	100

DISTRIBUTION OF LAURIE'S VOCABULARY

Category	%
Specific nominals:	
People	10
Animals	-
Objects	-
Total	10
General nominals:	
Objects	28
Substances	12
Animals and people	10
Letters and numbers	-
Abstractions	-
Pronouns	2
Total	52
Action words:	
Demand-descriptive	16
Notice	2
Total	18
Modifiers:	
Attributes	-
States	6
Locatives	-
Possessives	-
Total	6
Personal-social words:	
Assertions	6
Social-expressives	4
Total	10
Function words:	
Question	-
Miscellaneous	4
Total	4
Total	100

DISTRIBUTION OF JASON'S VOCABULARY

Category	%
Specific nominals:	
People	10
Animals	-
Objects	-
Total	10
General nominals:	
Objects	12
Substances	10
Animals and people	16
Letters and numbers	-
Abstractions	-
Pronouns	4
Total	42
Action words:	
Demand-descriptive	6
Notice	4
Total	10
Modifiers:	
Attributes	4
States	4
Locatives	2
Possessives	2
Total	12
Personal-social words:	
Assertions	8
Social-expressives	12
Total	20
Function words:	
Question	2
Miscellaneous	4
Total	6
Total	100

DISTRIBUTION OF STEFANIE'S VOCABULARY

Category	%
Specific nominals:	
People	18
Animals	-
Objects	-
Total	18
General nominals:	
Objects	28
Substances	10
Animals and people	6
Abstractions	-
Pronouns	2
Total	46
Action words:	
Demand-descriptive	20
Notice	-
Total	20
Modifiers:	
Attributes	-
States	8
Locatives	-
Possessives	-
Total	8
Personal-social words:	
Assertions	2
Social-expressives	6
Total	8
Function words:	
Question	-
Miscellaneous	-
Total	-
Total	100

DISTRIBUTION OF LISA'S VOCABULARY

Category	%
Specific nominals:	
People	6
Animals	2
Objects	-
Total	8
General nominals:	
Objects	14
Substances	10
Animals and people	10
Letters and numbers	-
Abstractions	-
Pronouns	6
Total	40
Action words:	
Demand-descriptive	14
Notice	-
Total	14
Modifiers:	
Attributes	-
States	12
Locatives	2
Possessives	-
Total	14
Personal-social words:	
Assertions	6
Social-expressives	18
Total	24
Function words:	
Question	-
Miscellaneous	-
Total	-
Total	100

DISTRIBUTION OF MICHELLE'S VOCABULARY

Category	%
Specific nominals:	
People	12
Animals	-
Objects	-
Total	12
General nominals:	
Objects	26
Substances	16
Animals and people	2
Letters and numbers	-
Abstractions	2
Pronouns	2
Total	48
Action words:	
Demand-descriptive	14
Notice	2
Total	16
Modifiers:	
Attributes	6
States	4
Locatives	4
Possessives	-
Total	14
Personal-social words:	
Assertions	2
Social-expressives	8
Total	10
Function words:	
Question	-
Miscellaneous	-
Total	-
Total	100

DISTRIBUTION OF CINDY'S VOCABULARY

Category	%
Specific nominals:	
People	10.53
Animals	-
Objects	-
Total	10.53
General nominals:	
Objects	26.32
Substances	5.26
Animals and people	5.26
Letters and numbers	-
Abstractions	-
Pronouns	10.53
Total	47.37
Action words:	
Demand-descriptive	21.05
Notice	-
Total	21.05
Modifiers:	
Attributes	-
States	10.53
Locatives	-
Possessives	-
Total	10.53
Personal-social words:	
Assertions	-
Social-expressives	5.26
Total	5.26
Function words:	
Question	5.26
Miscellaneous	-
Total	5.26
Total	100.00

DISTRIBUTION OF SHERRY'S VOCABULARY

Category	%
Specific nominals:	
People	16.67
Animals	-
Objects	-
Total	16.67
General nominals:	
Objects	16.67
Substances	-
Animals and people	5.56
Letters and numbers	-
Abstractions	-
Pronouns	11.11
Total	33.34
Action words:	
Demand-descriptive	5.56
Notice	-
Total	5.56
Modifiers:	
Attributes	-
States	11.11
Locatives	-
Possessives	-
Total	11.11
Personal-social words:	
Assertions	5.56
Social-expressives	22.22
Total	27.78
Function words:	
Question	5.56
Miscellaneous	-
Total	5.56
Total	100.02

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